

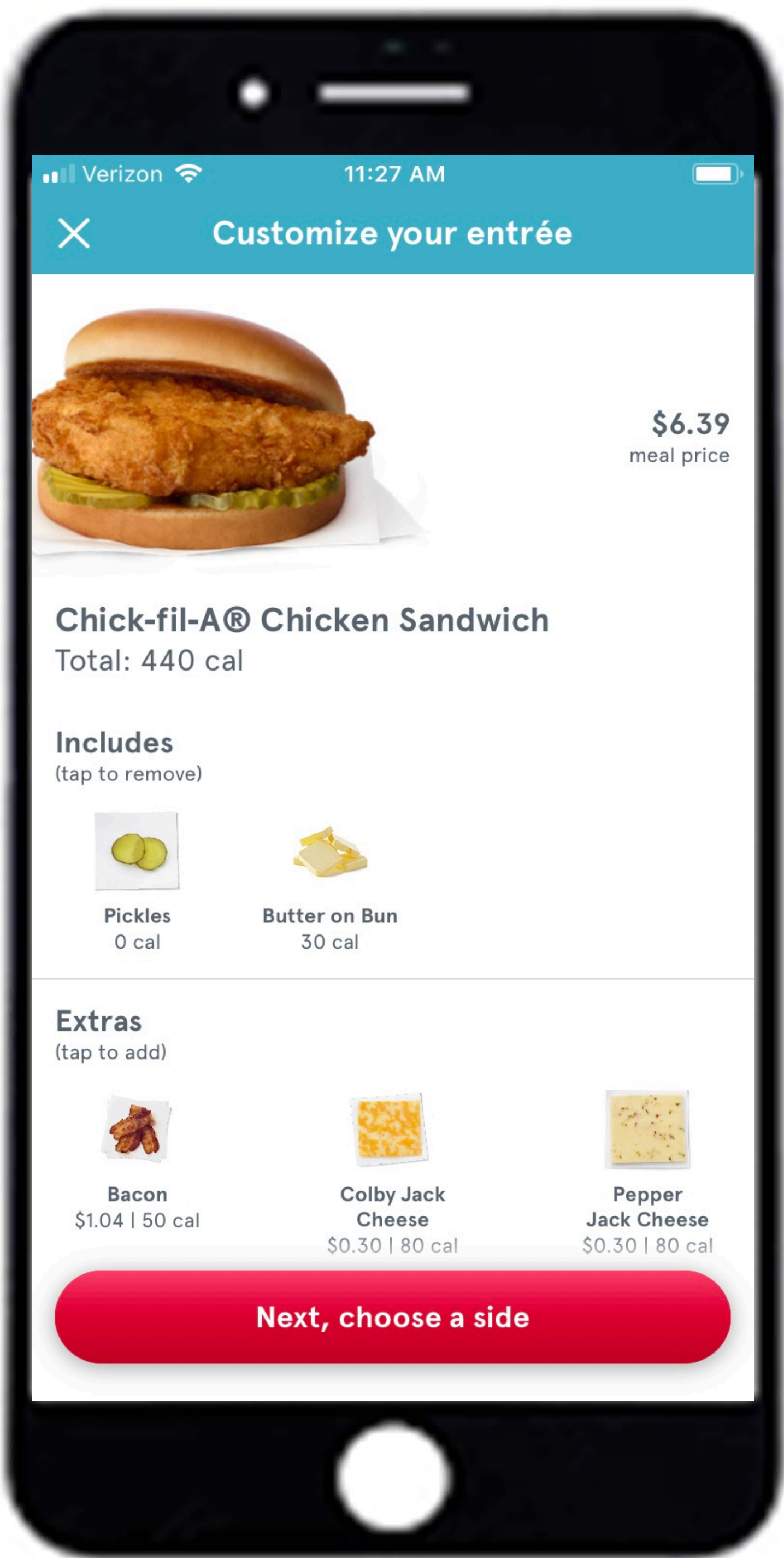
WELCOME TO THE FUTURE... DIGITAL FOOD SAFETY



HARRIS COUNTY FOOD SAFETY SUMMIT
June 5, 2019

Steven A. Lyon, Ph.D.
Chick-fil-A, Inc.

THE FUTURE OF FOOD SAFETY IS DIGITAL



Chick-fil-A and Houston Market

“Local Ownership of a Meaningful Brand”

- 60+ locations
- Highest volume market for sales
- Continues to be an important region
- Loyal customers
- Passionate Owner/Operators and Team members
- We love Houston!



Food Safety must be:

- People led – Active Managerial Control
- Risk Based – Food Safety 5
- Technology Enabled – Embrace and leverage Digital Food Safety

FRANK YIANNAS, FDA (FORMERLY AT WAL-MART & DISNEY)

“We’re not just in the chicken business, we’re also in the people business.”

S. TRUETT CATHY, FOUNDER CHICK-FIL-A

People Led

...

Restaurant: Operator down to team members. PIC to drive culture

Corporate Level: Influence Executives and build resources

- 5 IT resources designated only for food safety initiatives
- 3 Corporate Communications resources designated only for food safety initiatives



RISK = Hazards X Exposure

RAW CHICKEN
#1 CAUSE ILLNESSES

SALMONELLA
CAMPYLOBACTER
C. PERFRINGENS
BONES/PLASTIC/METAL

> 1.6 M LBS. DAILY
1/2 BILLION ILBS ANNUALLY

FRESH PRODUCE
1 CAUSE OUTBREAKS

E. COLI
SALMONELLA
LISTERIA
CYCLOSPORA/CRYPTOSPORIDIUM

> \$ 2 B ANNUAL SALES

TEAM MEMBERS
> 60% ILLNESSES

NOROVIRUS
HEP-A

HIGH VOLUMES
MANUAL PREP

Food Safety 5 – Risk Based Approach to Hazard Reduction



Health & Hygiene



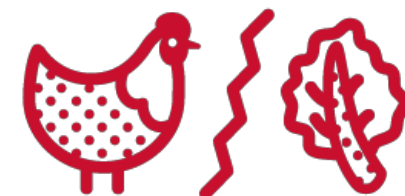
Cleaning & Sanitation



Pests



Time & Temperature



Cross-Contamination

TECHNOLOGY ENABLED

Food Safety Digital – Better Active Managerial Control (AMC) of Chick-fil-A's Food Safety Management Systems @ the Leader's Fingertips



Leverage Chick-fil-A's digital ecosystem to engage restaurants everyday



Enable IoT to measure key process indicators (KPIs)



Harness data & AI to inform and improve decision making



Harnessing data to improve decision making

GOAL: Reduce needed human input, increase automated decision making

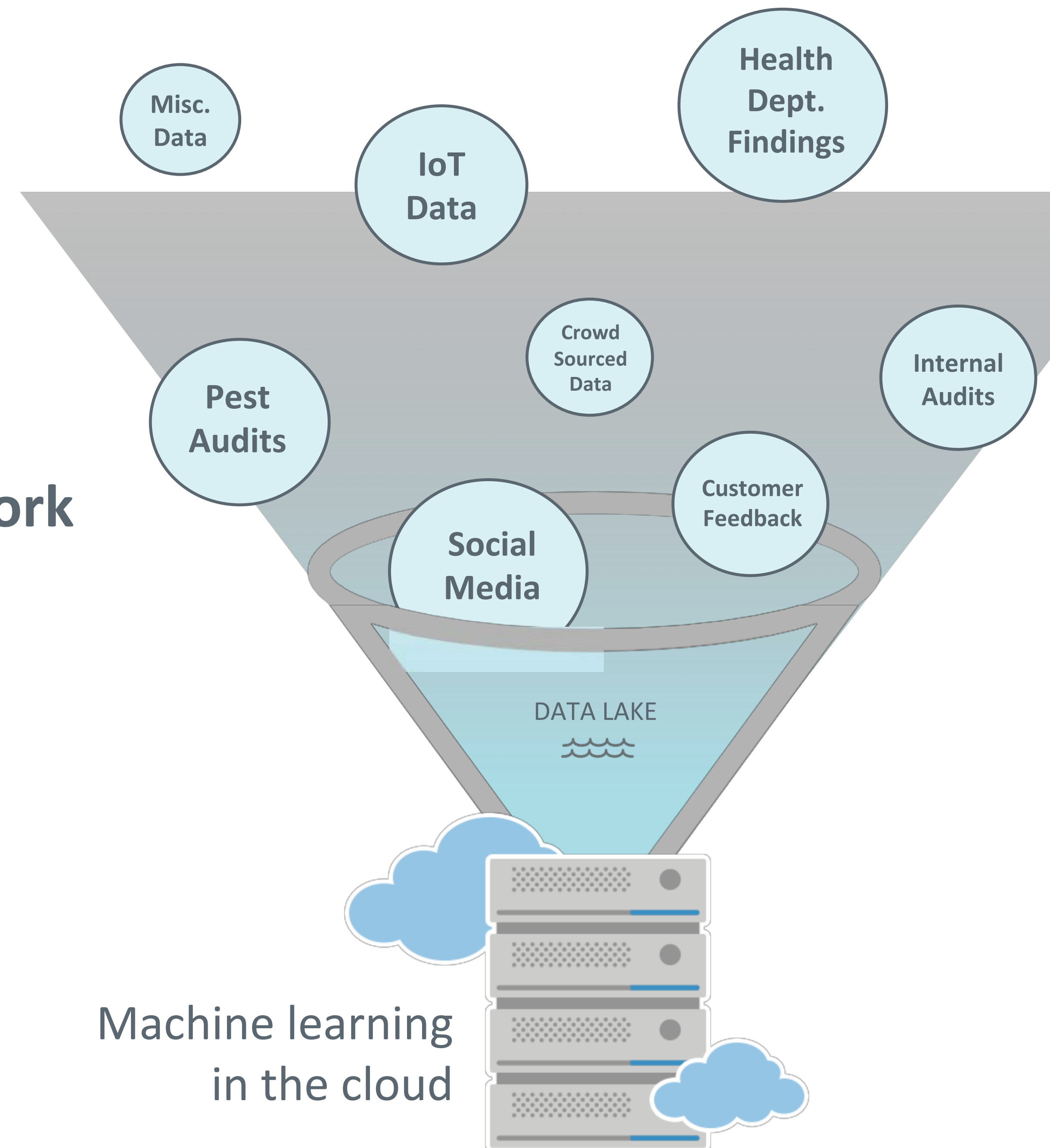
Food Safety Intelligence Maturity Framework

- **descriptive**... *what happened?*
- **diagnostic**...*why did it happen?*
- **predictive**... *what will happen?*
- **prescriptive**... *what should happen?*
- **cognitive**... *self learning prescriptive models*

From **hindsight** to **insight** to **foresight**



CHICK-FIL-A CONFIDENTIAL



Food Safety EcoSystem: Generating restaurant specific food safety insights



Food Safety Report

Food Safety

Performance Levels

- Elite: 1
- Good: 2, 3, 4
- Fair: 5, 6, 7
- Unsatisfactory: 8, 9
- Substandard: 10

Report Content

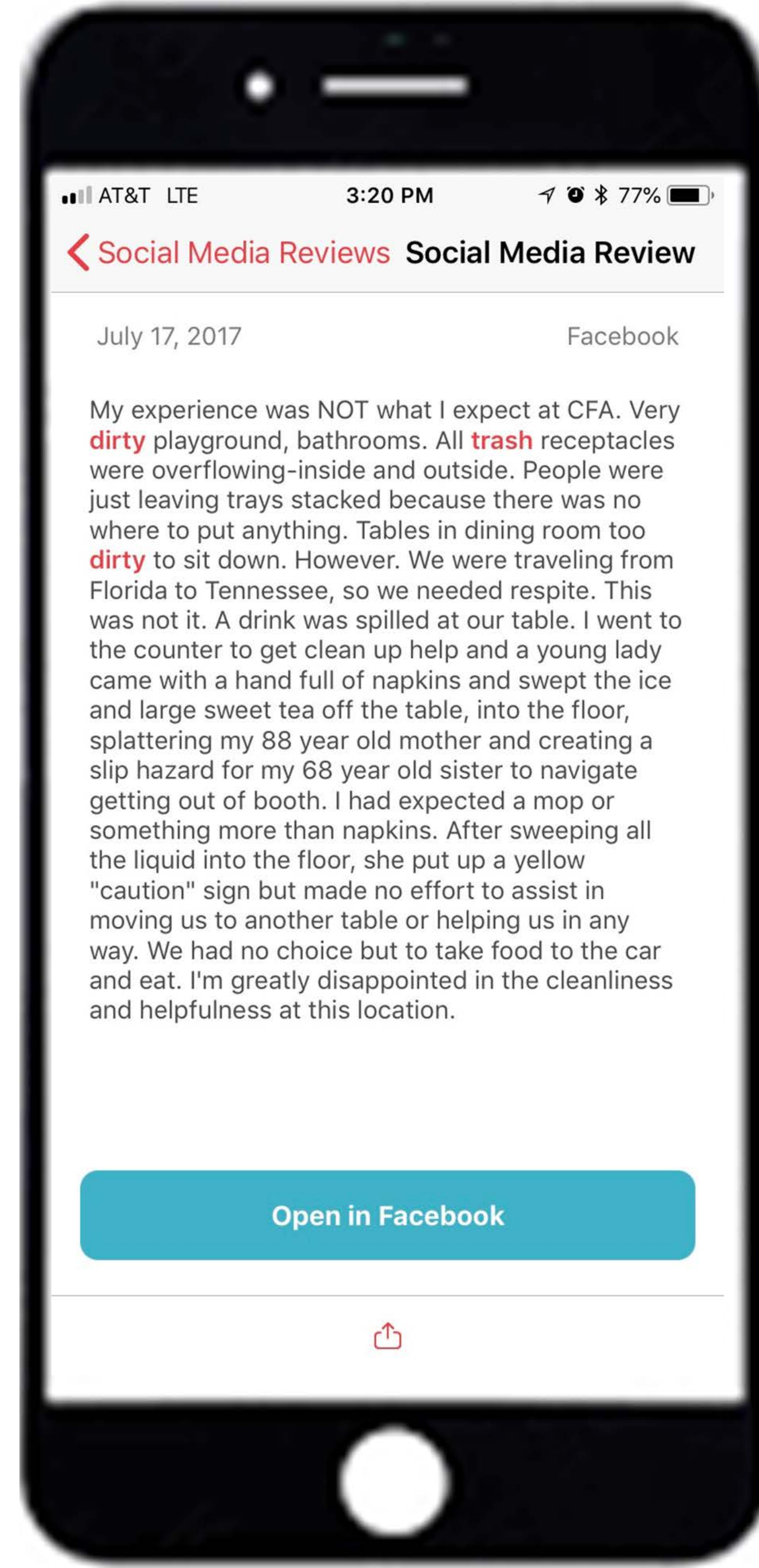
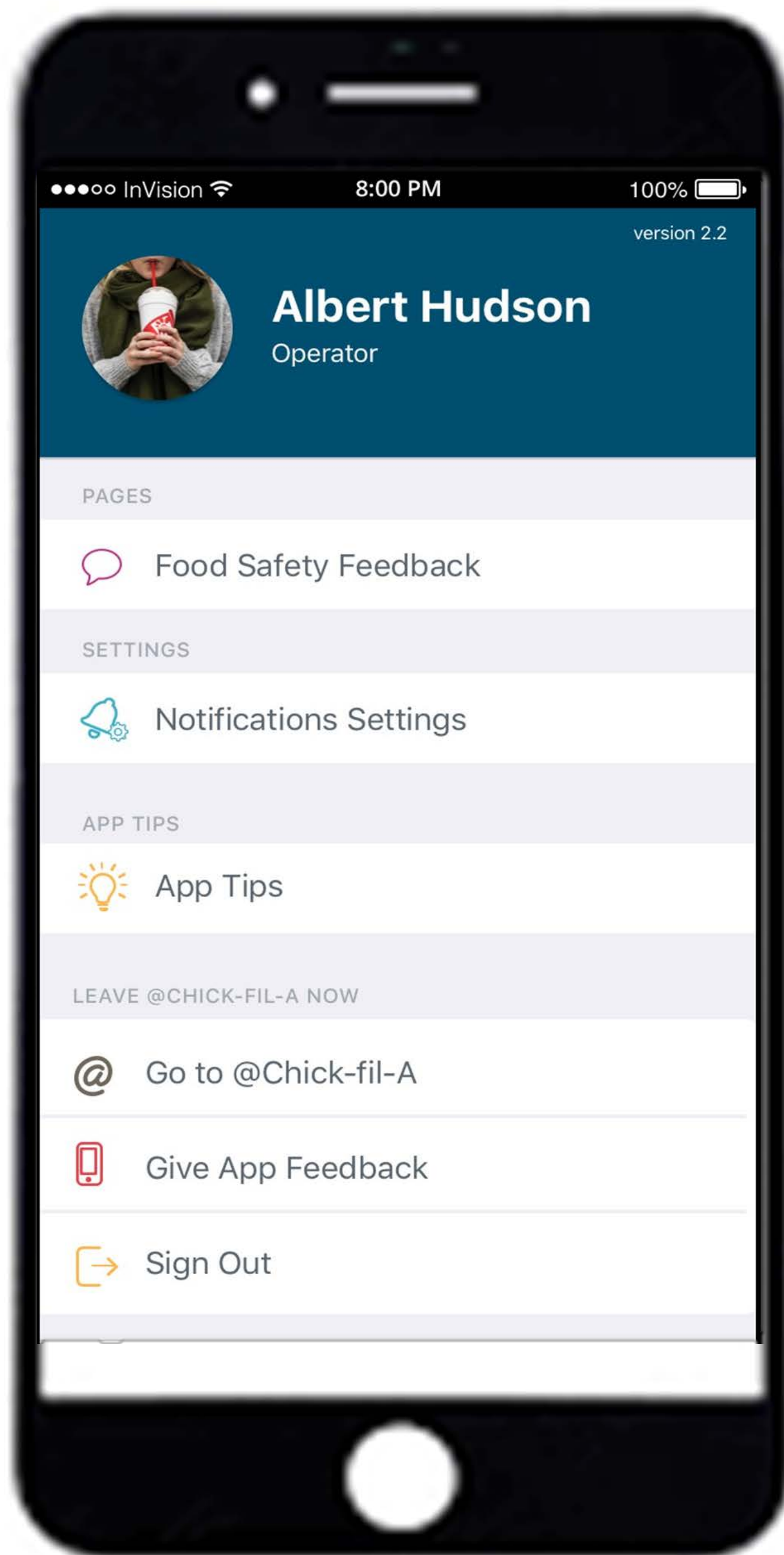
- Overall food safety performance
- Top improvement areas
- Summary of historical findings by FS5

2019 Enhancements:

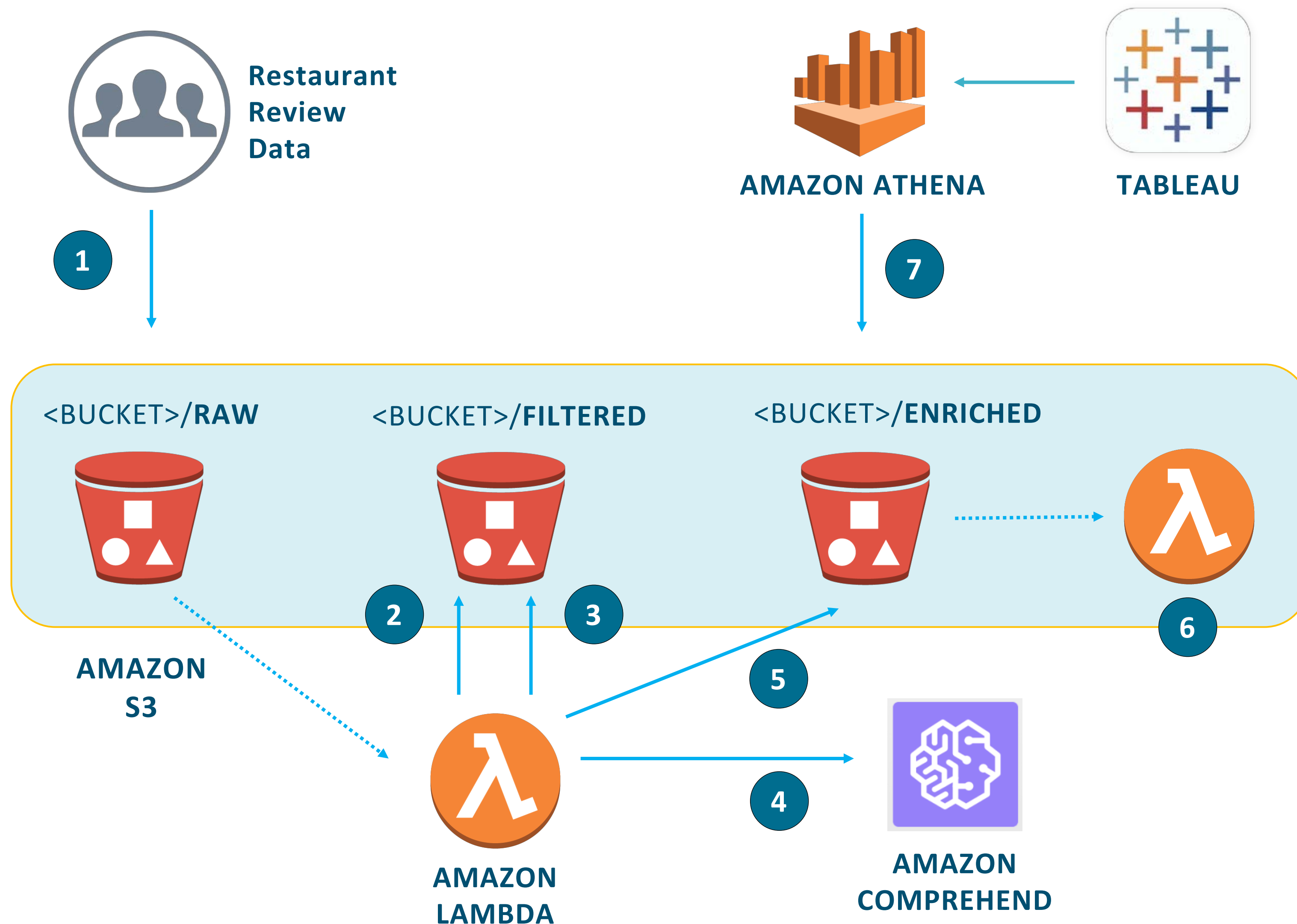
- Spanish Version – Q1
- Detailed Findings – Q2
- Mobile Compatibility - Q3

AWARENESS OF THEIR OPPORTUNITIES
ACTIONS NEEDED TO RESOLVE
ACCOUNTABILITY - 46% IMPROVED SCORE

Social Media



Social Media Text Mining Process (built on AWS)



DATA FLOW

1. Ingest review data
2. Apply buzzword filter
3. Extract key text
4. Check sentiment
5. Determine legitimacy
6. Trigger business events
7. Update dashboards

Analyzing Sentiment Using Natural Language Processing (NLP)

KEYWORD EXAMPLES

ILLNESS
FOOD POISONING
VOMIT
VOMITING
THROW UP
BARF
NAUSEA
UPSET STOMACH
STOMACH ACHE
DIARRHEA
PESTS
BUGS
INSECT
INFESTATION
ROACH
COCKROACH
RAT
RATS
MOUSE
MICE
RODENT
RODENTS
FLY
FLIES
DIRTY
FILTHY
E. COLI
SALMONELLA
NOROVIRUS

DIDN'T WASH HANDS
NOT WEARING HAIR NET
NOT WEARING GLOVES
SNEEZE
UNSANITARY
UNCLEAN
GET SICK
FEEL SICK
FELT SICK
FEEL SO SICK
FELT SO SICK
SO SICK
MAKES ME SICK
MADE ME SICK
MADE HER SICK
MADE HIM SICK
MADE US SICK
WE GOT SICK
I WAS SO SICK
I WAS SICK
WE WERE SO SICK
ENDED UP SICK
TERRIBLY SICK
SUPER SICK
MAJORLY SICK
WASN'T FULLY COOKED
UNDER COOKED
UNDERCOOKED
FOUL TASTE

MOLD
MILDEW
FUNGUS
FOREIGN OBJECT
FINGERNAIL
FEVER
GROSS
GROSSNESS
THREW UP
NO HAIR NET
SERVED FOOD WITH HAIR
FOUND HAIR
FILLED WITH HAIR
FILLED WITH HUMAN HAIR
HAIR WRAPPED AROUND
PIECE OF HAIR
HAIR WE FOUND
HAIR FOUND
HAIR IN
HAIR ON
HAIR UNDER
HAIR FRIED
SNOT
GETTING SICK
HAVE GOTTEN SICK
WAS SICK
VERY SICK
COMPLETELY SICK
GOT SICK

REVIEW EXAMPLES

I ate there last night and **FELT SICK** to my stomach. Not cool!

WORDS FOUND: "FELT SICK"
SENTIMENT: MOSTLY NEGATIVE

Great food but the restaurant was **FILTHY**, definitely not the norm!

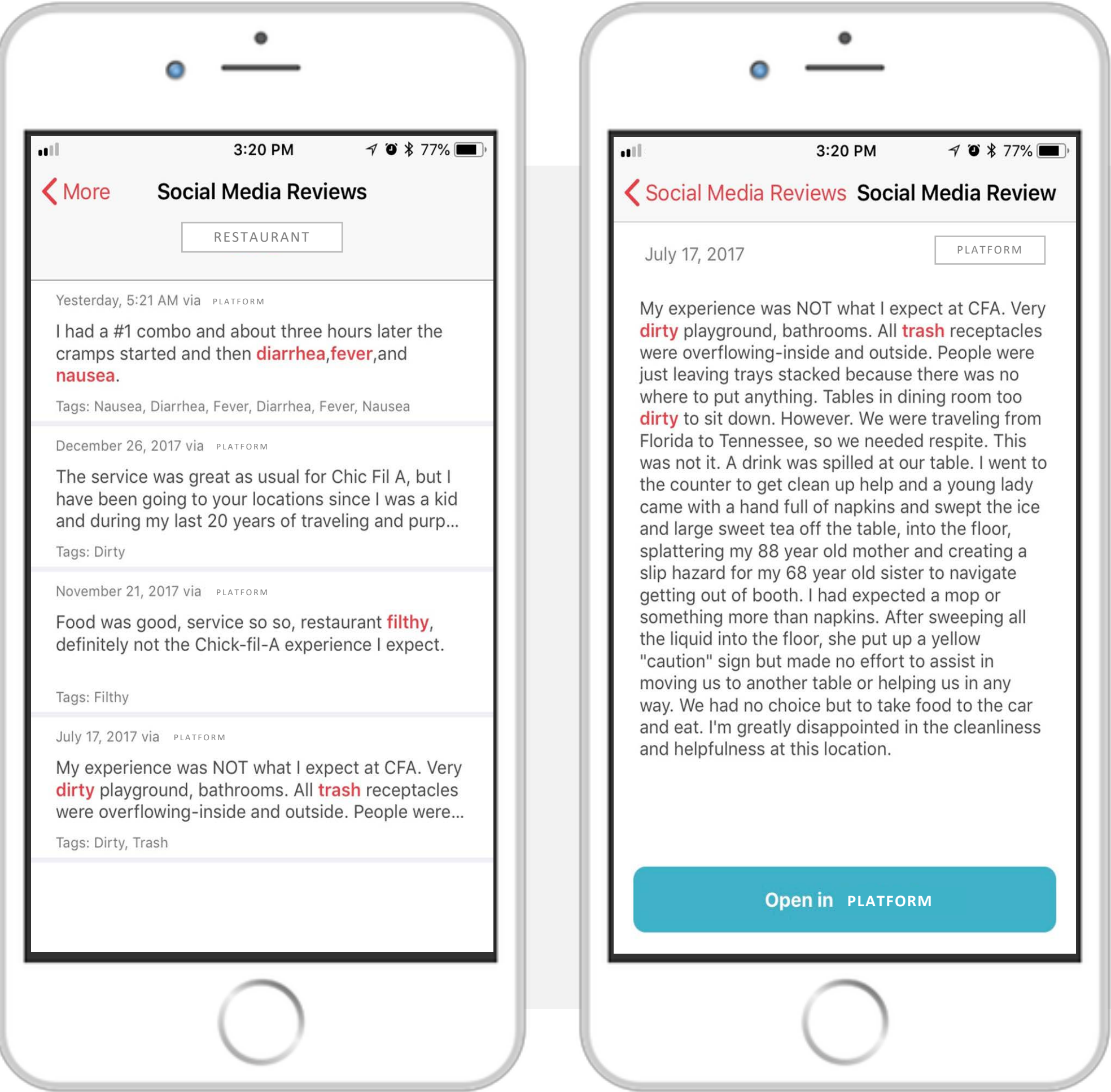
WORDS FOUND: "FILTHY"
SENTIMENT: MOSTLY MIXED

I love this place! They make a **SICK** sandwich!

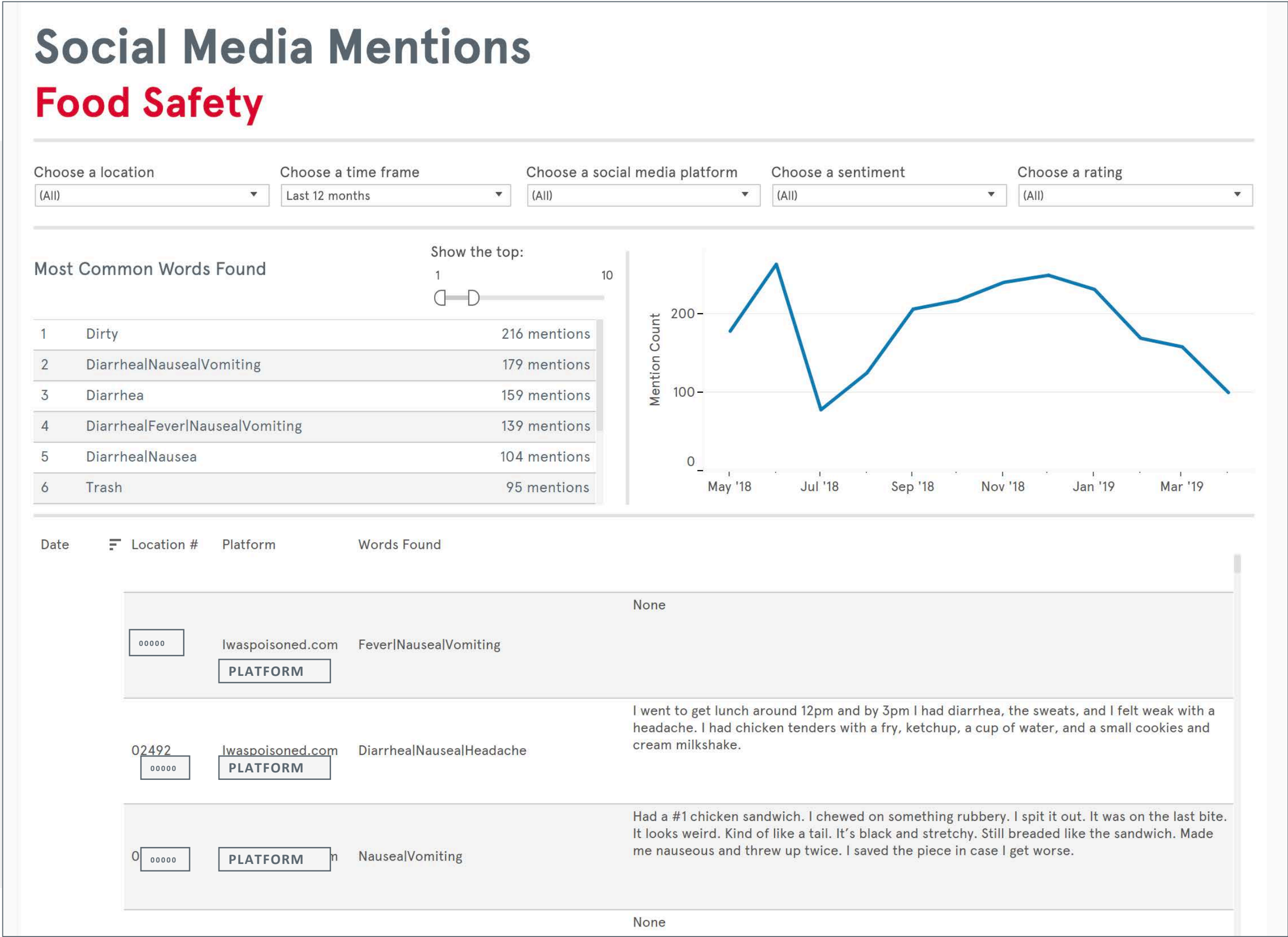
WORDS FOUND: "SICK"
SENTIMENT: MOSTLY POSTIVE

Reviewing The Data

OPERATOR VIEW



CORPORATE VIEW



Leveraging IoT to measure food safety KPIs

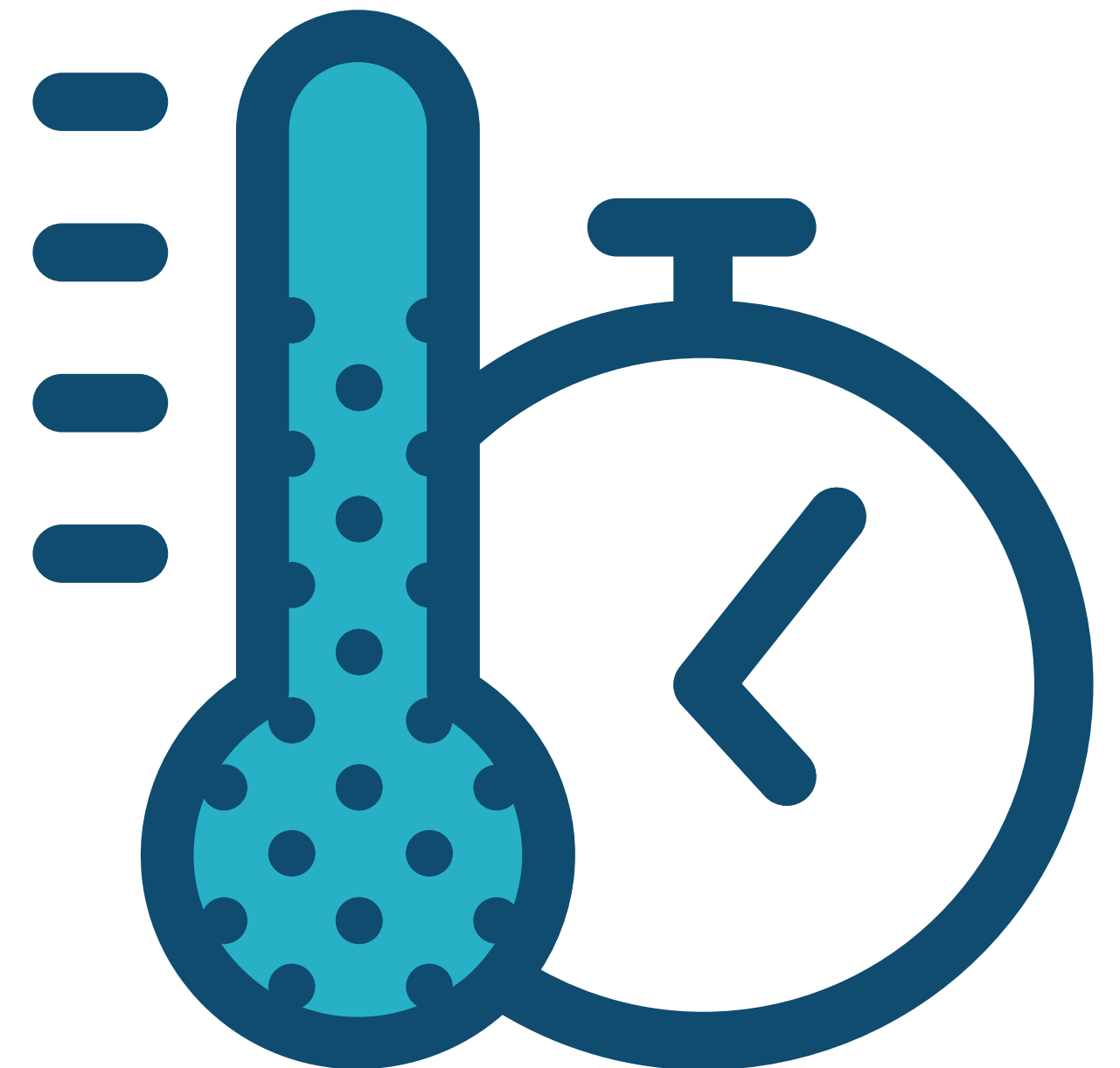
EXCLUDING SICK TEAM MEMBERS



HAND WASHING



TIME & TEMPERATURE



Team Member Health Prompt

Select Response

Employee Health Question

Have you been diagnosed with any of the following diseases in the last 48 hours: E. coli, Shigella, Salmonella, Norovirus, or Hepatitis A?

.....
Ha sido diagnosticado con alguna de las siguientes enfermedades en las ultimas 48 horas: E. coli, Shigella, Salmonella, Norovirus o Hepatitis A?

Yes

No

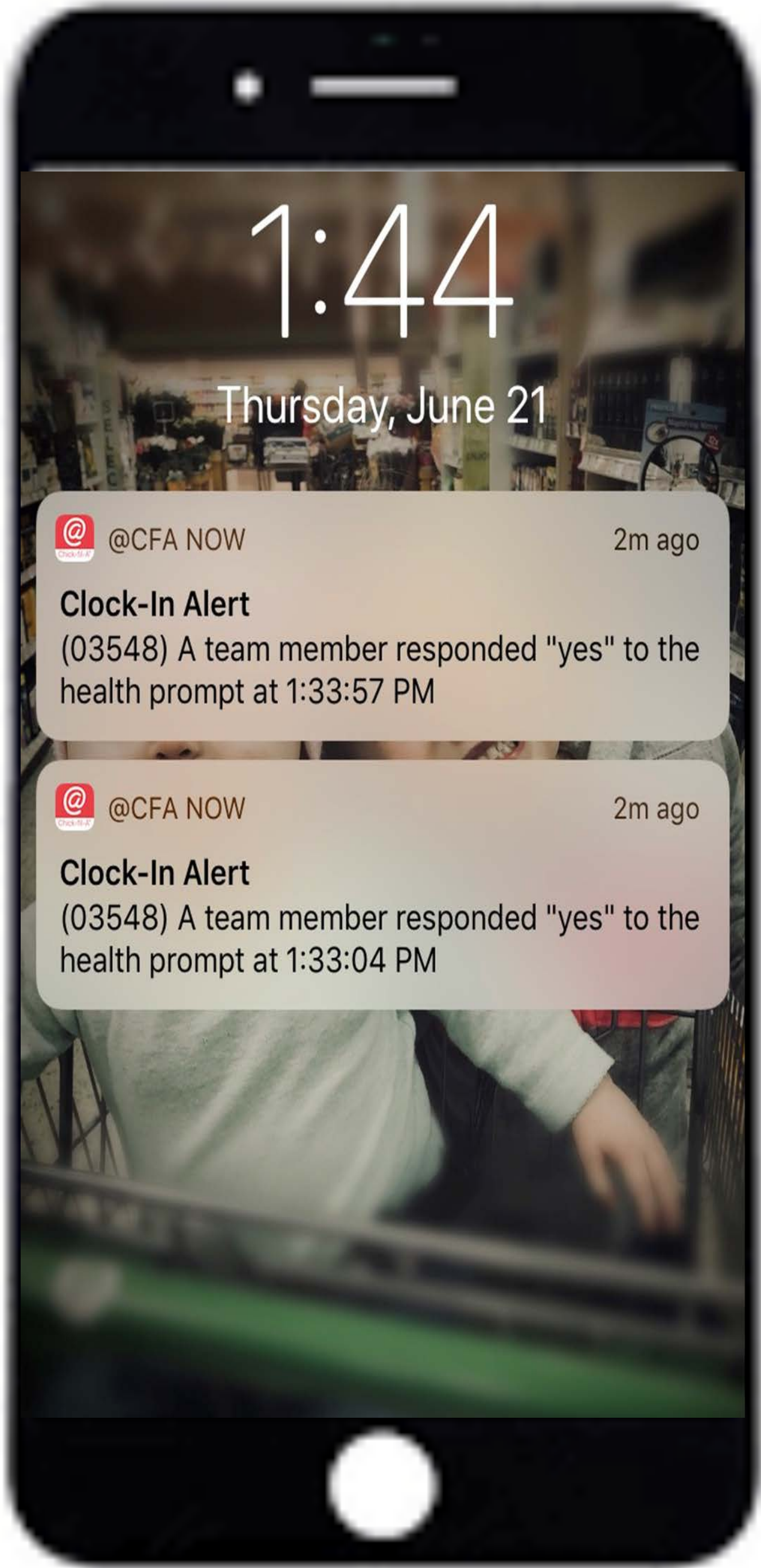
Menu

Setup

POS

Store Mgmt.

10:22 AM



Team Member Health Prompt

Select Response

Employee Health Question

Have you experienced any of the following symptoms within the last 24 hours from an infectious condition: Fever with sore throat, Diarrhea, Vomiting, Jaundice, or Open sores and wounds?

.....

Ha experimentado alguno de los siguientes sintomas de una enfermedad infecciosa en las ultimas 24 horas: Fiebre con dolor de garganta, diarrea, vomito, ictericia (piel amarilla), o heridas o llagas abiertas?

Yes

No

Menu

Setup

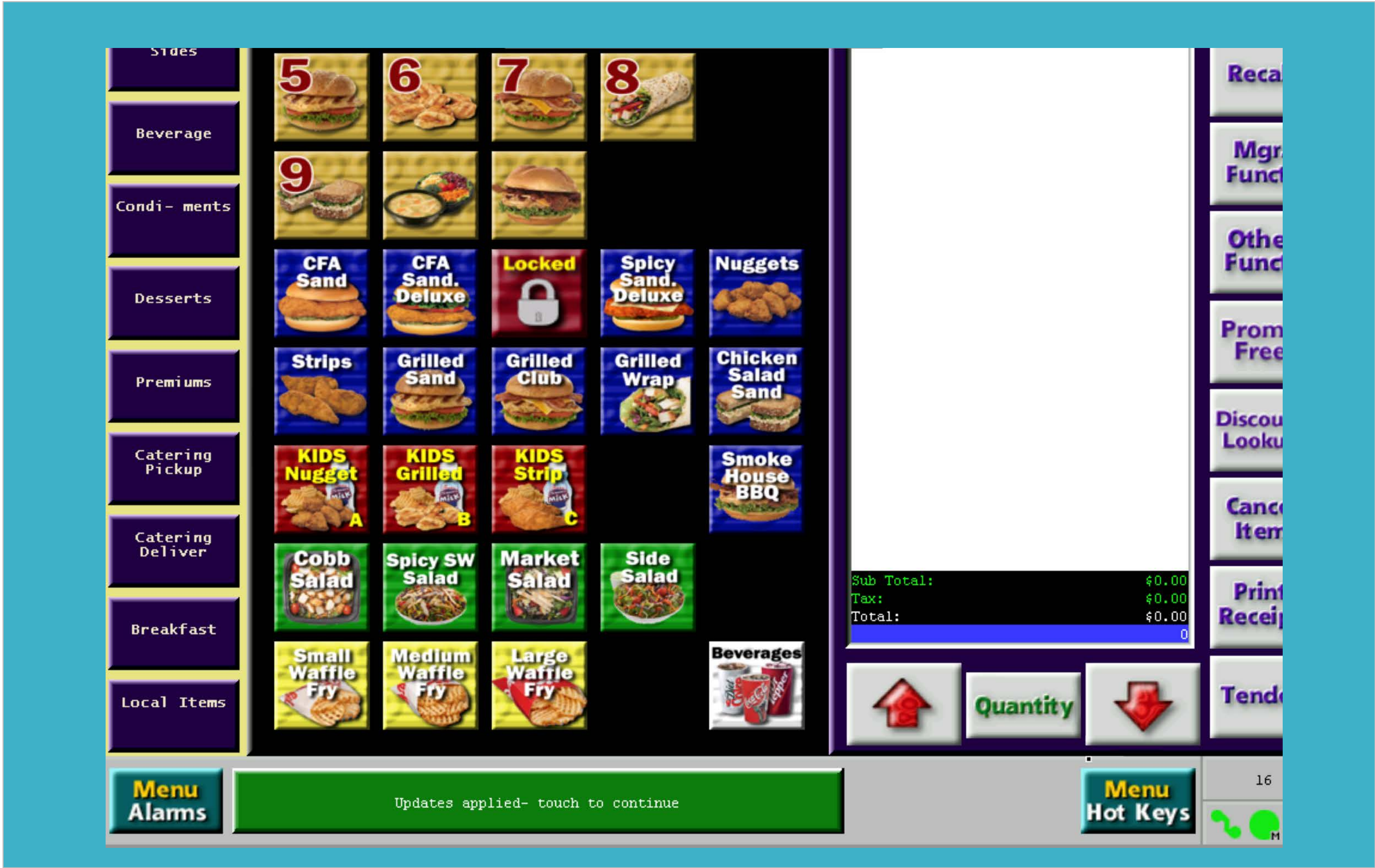
POS

Store Mgmt.

10:22 AM



POS LOCK OUT FOR RECALLS



IoT Hand Washing Monitoring

Dispenser Frequency

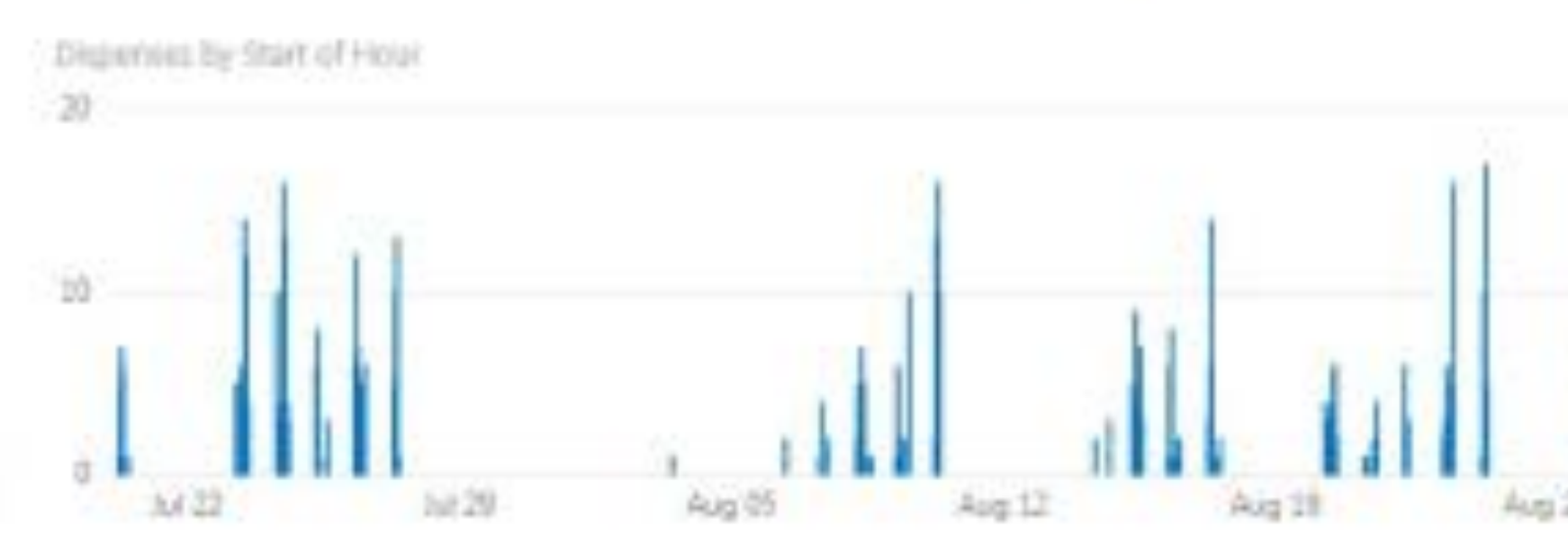
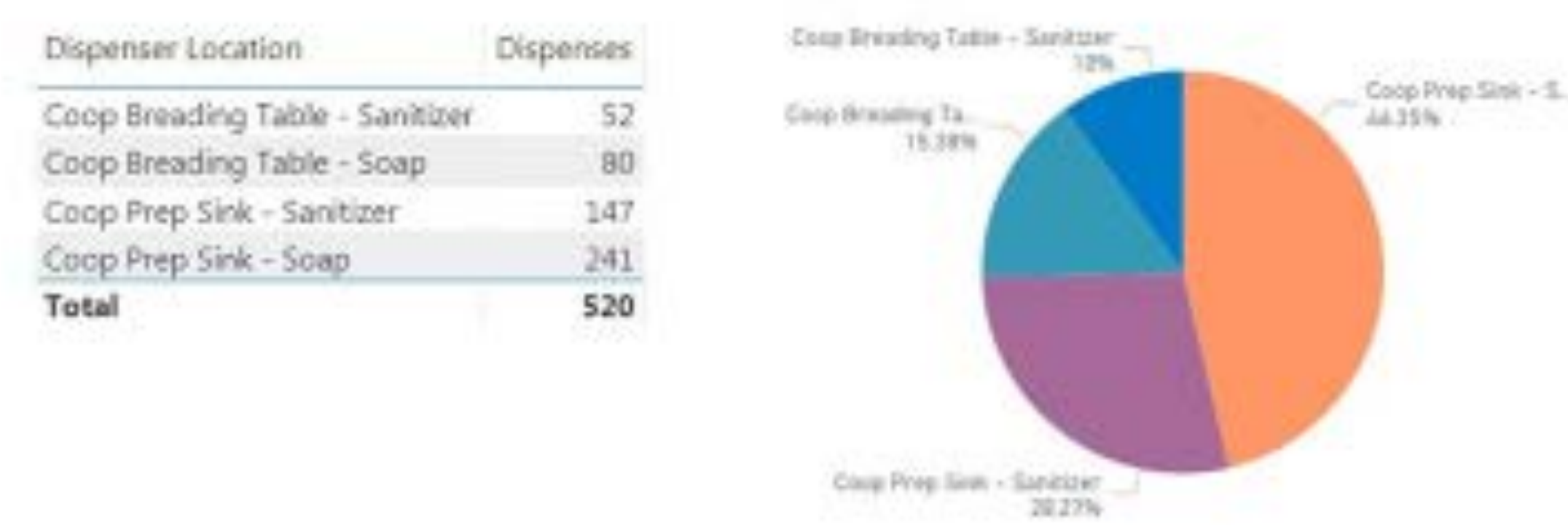
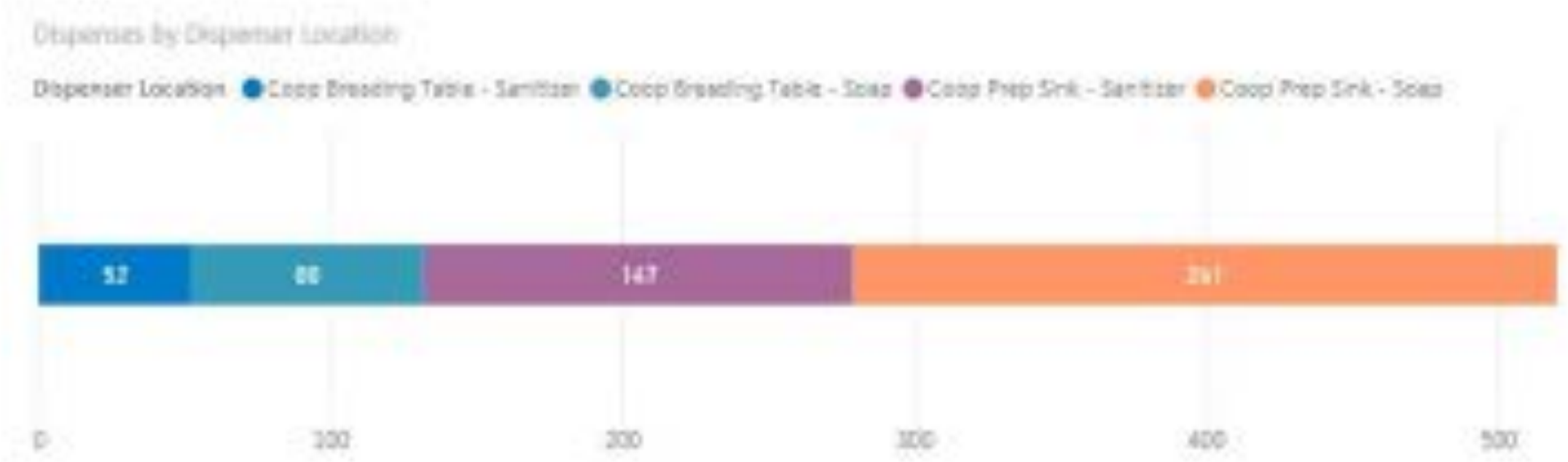
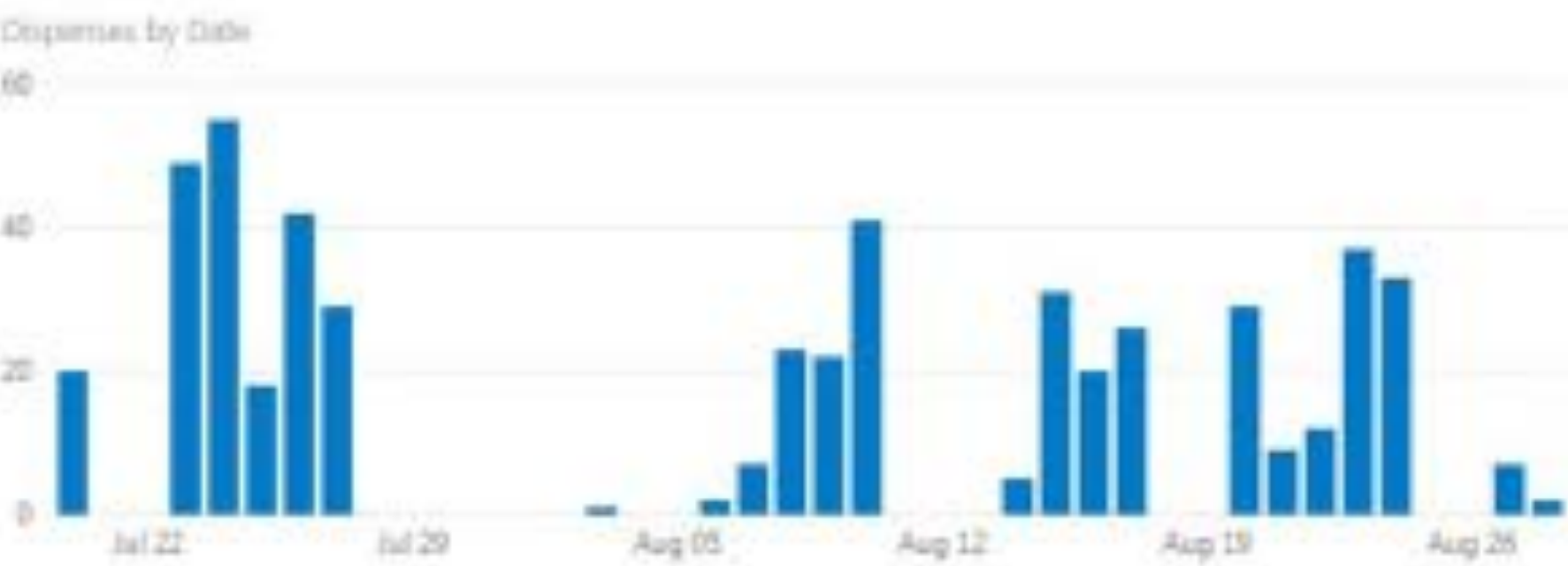


Date: 7/25/2018 8/28/2018

Store Location: Coop Kitchen

Dispenser Location:

- ☐ Select All
- ☐ Coop Breeding Table - San-
- ☐ Coop Breeding Table - Soap
- ☐ Coop Prep Sink - Sanitizer
- ☐ Coop Prep Sink - Soap



All Dispenser Activations to Date

Date: 11/26/2018 1/9/2019



Dispenses excluding Restrooms



Dispenses including Restrooms



December 12 - Single Day Activations

Date: 12/12/2018 12/12/2018



Dispenses excluding Restrooms



Dispenses including Restrooms



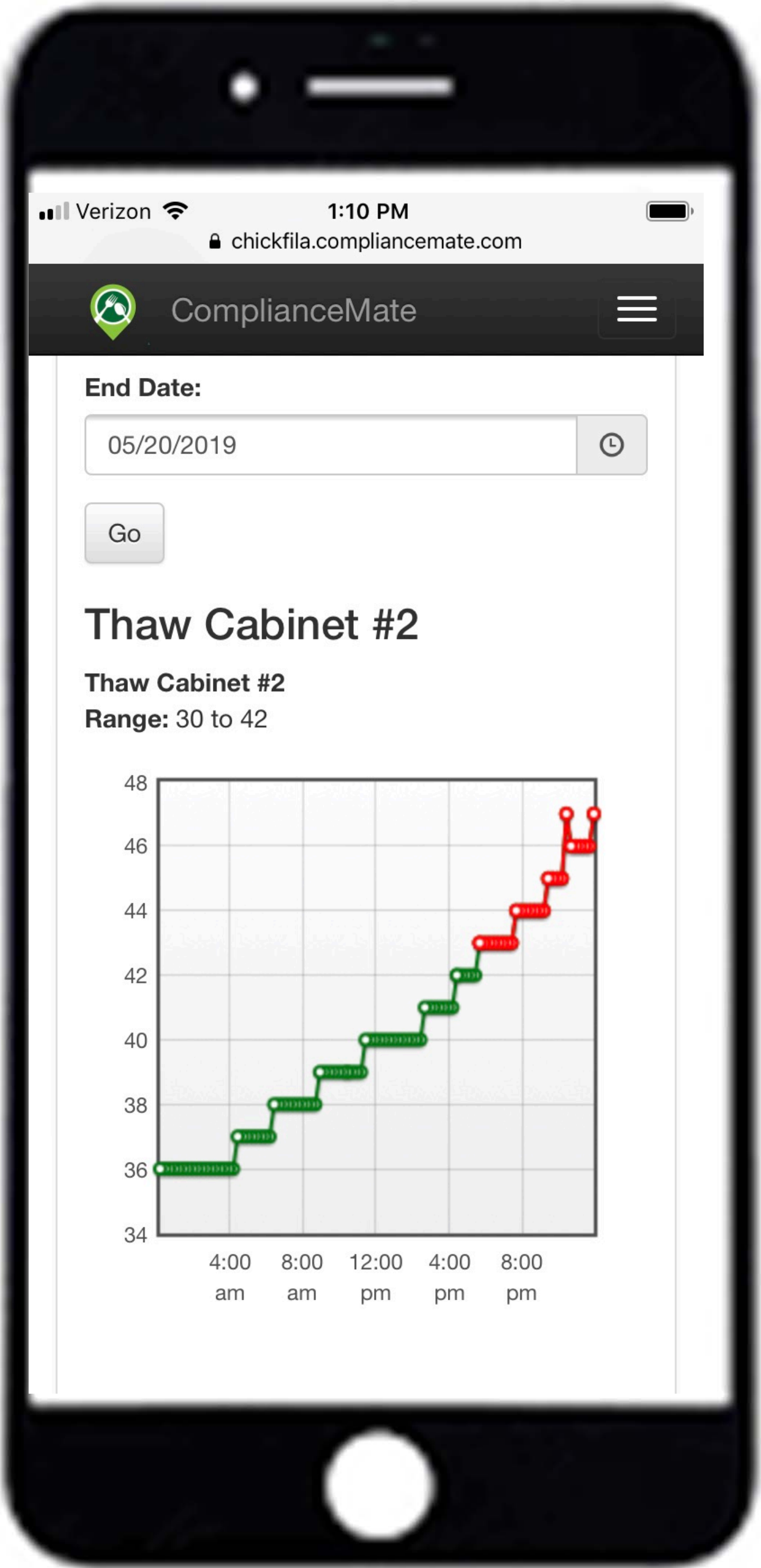
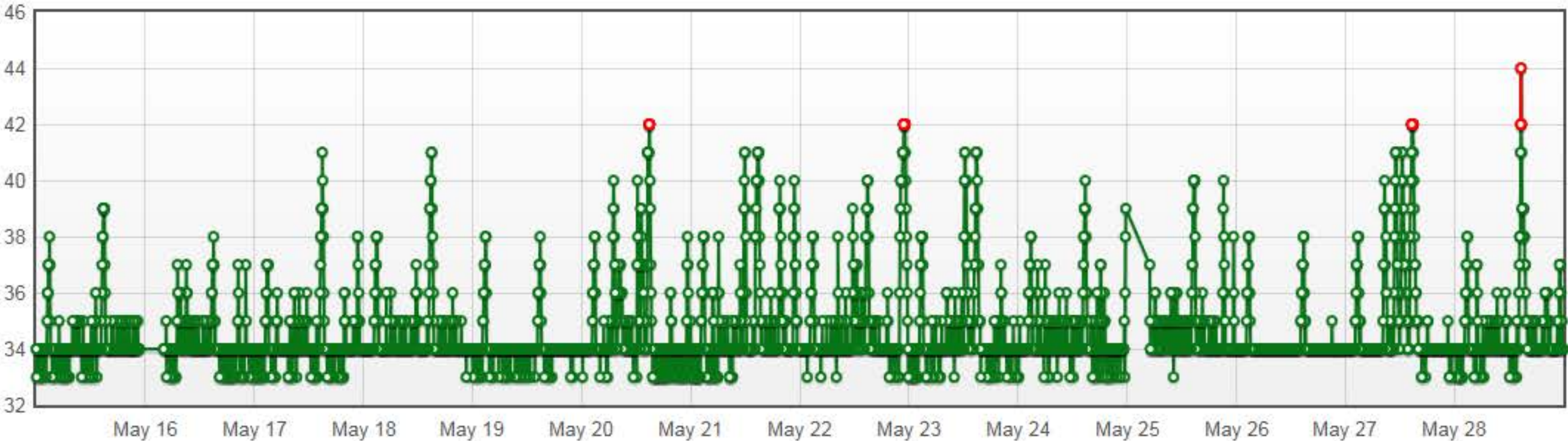


IoT Temperature Monitoring

Walk In Cooler

Graphs can only display 14 days of data at a time. Start Date has been changed to 05-15-2019

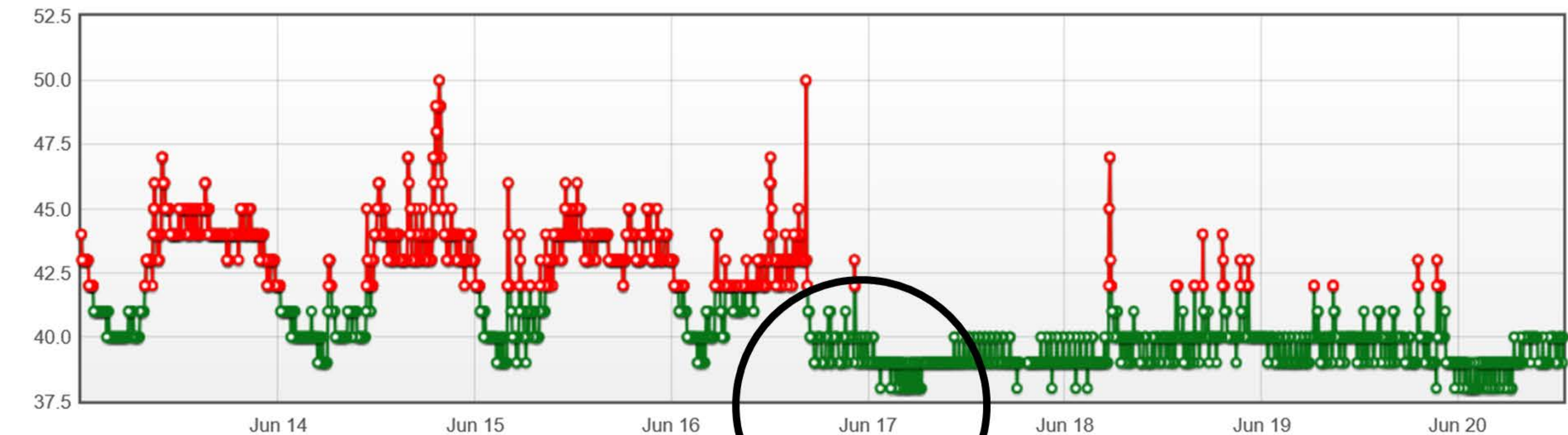
Walk In Cooler
Range: 30 to 41



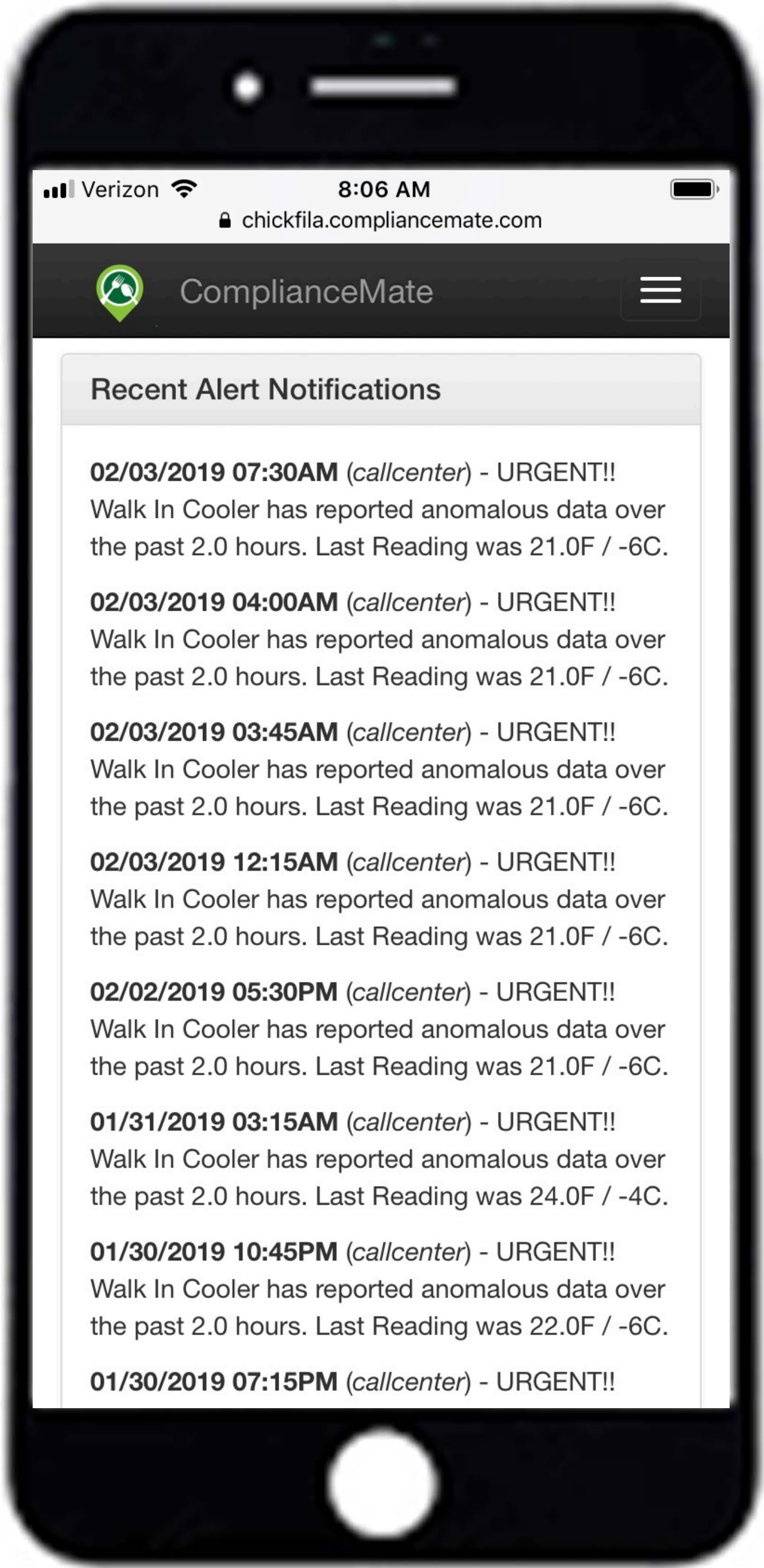
IoT Temperature Monitoring

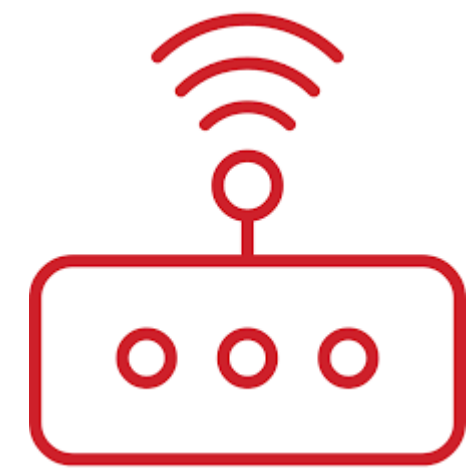
Walk In Cooler

Walk In Cooler
Range: 33 to 41



ACTION TAKEN TO RESOLVE





RIOT CONNECTED KITCHENS

- TEMPS
- HAND WASH
- POS
- OIL, WARE WASH
CHEMICALS

